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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.     | CONFIRMATION NO. |
|---|-------------|----------------------|-------------------------|------------------|
| 10/807,334  | 03/24/2004  | Suenori Kimura       | 119252                  | 4010             |
| 25944   | 7590        | 09/16/2005           |                         |                  |
| OLIFF & BERRIDGE, PLC<br>P.O. BOX 19928<br>ALEXANDRIA, VA 22320 |             |                      | EXAMINER<br>WON, BUMSUK |                  |
|   |             |                      | ART UNIT<br>2879        | PAPER NUMBER     |

DATE MAILED: 09/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                   |   |
|------------------------------|--------------------------------------|-----------------------------------|---|
| <b>Office Action Summary</b> | <b>Application No.</b>               | <b>Applicant(s)</b>               |   |
|                              | 10/807,334<br>Examiner<br>Bumsuk Won | KIMURA ET AL.<br>Art Unit<br>2879 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 24 March 2004.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-8 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 3/24/2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

|   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/04, 9/04</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Drawings*

1 The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "7" has been used to designate both aluminum thin film and bottom of the glass container. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

In addition to Replacement Sheets containing the corrected drawing figure(s), applicant is required to submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as "Annotated Sheets" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37 CFR 1.121(d)(1). Failure to timely submit the proposed drawing and marked-up copy will result in the abandonment of the application.

2 The drawings are objected to because reference character "3-3" is not shown in the drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

In addition to Replacement Sheets containing the corrected drawing figure(s), applicant is required to submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as "Annotated Sheets" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37 CFR 1.121(d)(1). Failure to timely submit the proposed drawing and marked-up copy will result in the abandonment of the application.

***Specification***

3 The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Photomultiplier tube having focusing electrodes with apertures and screens.

4 The disclosure is objected to because of the following informalities: The term "the" (note page 5, line 12) should be omitted. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5 Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Stephenson (US 4,777,403).

Regarding claim 1, Stephenson discloses a photomultiplier tube (note figure 3, item 100) comprising:

a faceplate (note figure 3, item 102) made from glass (note column 7, lines 1-2)

having a surface (note figure 3);

a side tube (note figure 3, not referenced) made from glass (note column 7, lines 1-2) and having a hollow shape extending in a tube axial direction which is substantially perpendicular to the faceplate (note figure 3, item 102), the side of tube being joined to the faceplate (note figure 3, it shows that the side tube has a hollow shape extending in a tube axial direction which is perpendicular to the faceplate);

a photocathode (note figure 3, item 104) formed on the surface of the faceplate (note figure 3, item 102) in the side tube to emit a photoelectron in response to light incident on the faceplate (note figure 3, item 106, and column 3, line 8, "flow of photoelectrons");

an electron multiplying portion (note figure 9, items 140, 216, 220, 226) provided in the side tube for multiplying the photoelectron emitted from the photocathode (note column 3, lines 7-10);

and an anode (note figure 3, item 120) provided inside the side tube (note figure 3, not referenced) for receiving an electron emitted from the electron multiplying portion (note column 3, lines 13-14);

wherein the electron multiplying portion includes:

a first dynode (note figure 9, item 216) placed at a position in the tube axial direction (note figure 9, item 216) for multiplying the photoelectron impinging thereon from the photocathode to emit a secondary electron (note column 3, lines 7-10), the first dynode having a proximal end which is close to the anode (note figure 9, item 216);

a second dynode (note figure 9, item 226) placed at a substantially same position as the position of the first dynode in the tube axial direction (note figure 9, the axial position of the first dynode and second dynode are substantially same position), the second dynode multiplying the secondary electrons impinging thereon from the first dynode to emit a secondary electron (note column 3, lines 7-10), the second dynode having a proximal end which is close to the anode (note figure 9, item 226);

a third dynode (note figure 9, item 140) provided on an anode (figure 3, item 120) side of the first and second dynodes in the tube axial direction (note figure 9, the third dynode is located between first/second dynode and anode (not shown but located on the right hand side end of the photomultiplier tube (item 200)) for multiplying the secondary electrons impinging thereon from the second dynode to emit secondary electrons (note figure 9, Stephenson does not disclose the secondary electrons impinging from the second dynode to emit secondary electrons, however, in order for the secondary electrons to reach anode, it is obvious that at least some secondary electrons will impinge on the third dynode);

and a focusing electrode (note figure 9, item 220) having:

a flat plate (note figure 9, item 220, the plate that is parallel with photocathode (item 204)) provided between the second (note figure 9, item 226) and third dynodes (note figure 9, item 140), the flat plate having an aperture (note figure 9, item 220, there is an aperture in the center of the focusing electrode (item 220) that enables the third dynode (figure 9, item 140) to face the second dynode (note figure 9);

a first screen (note figure 9, there is a screen that extends axially towards first dynode on the upper part of the focusing electrode (item 220)) provided on a first dynode side of the aperture, the first screen extending across the proximal end of the first dynode towards the photocathode (note figure 9);

and a second screen (note figure 9, there is a screen that extends axially towards second dynode on the bottom part of the focusing electrode (item 220)) provided on a second dynode side of the aperture, the second screen extending towards the photocathode so that a front end thereof is positioned above the proximal end of the second dynode (note figure 9).

Regarding claim 2, Stephenson implicitly disclose the focusing electrode (note figure 9, item 220) is maintained at a potential which is higher than a potential of the second dynode (note figure 9, item 226) and lower than a potential of the third dynode (note figure 9, item 218).

Stephenson discloses the electrodes (note figure 9, items 146, 216, and 220) are connected to voltage supply through resistors (note figure 19). The potential differences between successive electrodes are determined by the values selected for various resistors (note figure 19, items R3-R14, and column 10, lines 53-61).

Regarding claim 3, Stephenson discloses a focusing electrode (note figure 9, item 220) having:

a first screen (note figure 9, there is a screen that extends axially towards first dynode on the upper part of the focusing electrode (item 220) formed on a proximal end side of the first dynode and extending across the proximal end of the first dynode toward the photocathode (note figure 9);

a flat plate (note figure 9, item 220, the plate that is parallel with photocathode (item 204)) having a cut-away portion (note figure 9, item 220, there is a cut away portion in the center of the focusing electrode (item 220) that enables the third dynode to face the second dynode (note figure 9);

and a second screen (note figure 9, there is a screen that extends axially towards second dynode on the bottom part of the focusing electrode (item 220) provided at the cut away portion (note figure 9, item 220, there is an aperture in the center of the focusing electrode (item 220)) on a proximal end side of the second dynode, the second screen extending across the proximal end of the second dynode towards the photocathode (note figure 9), the focusing electrode being secured between the second and third dynodes (note figure 9, the focusing electrode (item 220) is between second dynode (item 226) and third dynode (item 140)), thereby defining a space extending from the first dynode to the third dynode (note figure 9).

Regarding claim 4, Stephenson implicitly disclose the focusing electrode (note figure 9, item 220) is maintained at a potential which is higher than a potential of the second dynode (note figure 9, item 226) and lower than a potential of the third dynode (note figure 9, item 218).

Stephenson discloses the electrodes (note figure 9, items 146, 216, and 220) are connected to voltage supply through resistors (note figure 19). The potential differences between successive electrodes are determined by the values selected for various resistors (note figure 19, items R3-R14, and column 10, lines 53-61).

Regarding claim 5, Stephenson discloses a focusing electrode (note figure 9, item 220) having:

a first screen (note figure 9, there is a screen that extends axially towards first dynode on the upper part of the focusing electrode (item 220)) on a proximal end side of the first dynode (note figure 9, item 216) and extending across the proximal end of the first dynode towards the photocathode (note figure 9, item 204);

a flat plate (note figure 9, item 220, the plate that is parallel with photocathode (item 204)) provided between the second (note figure 9, item 226) and third dynodes (note figure 9, item 140), the flat plate having a first cut away portion (note figure 9, item 220, there is a cut away portion in the center of the focusing electrode (item 220)) that enables the third dynode to face the second dynode and a second cut away portion (note figure 9, item 220, there is a cut away portion in the center of the focusing electrode (item 220), the cut away portion is large enough so that it is formed between first or second dynodes and third dynodes) formed between the first and third dynodes;

a second screen (note figure 9, there is a screen that extends axially towards second dynode on the bottom part of the focusing electrode (item 220)) provided on a

second dynode side of the first cut away portion and extending across the proximal end of the second dynode towards the photocathode (note figure 9).

Regarding claim 6, Stephenson implicitly disclose the focusing electrode (note figure 9, item 220) is maintained at a potential which is higher than a potential of the second dynode (note figure 9, item 226) and lower than a potential of the third dynode (note figure 9, item 218).

Stephenson discloses the electrodes (note figure 9, items 146, 216, and 220) are connected to voltage supply through resistors (note figure 19). The potential differences between successive electrodes are determined by the values selected for various resistors (note figure 19, items R3-R14, and column 10, lines 53-61).

Regarding claim 7, Stephenson discloses a first focusing electrode (note figure 9, item 220, upper side of the item 220) provided on an anode side of the first dynode and on a photocathode side of the third dynode (note figure 9);

and a second focusing electrode (note figure 9, item 220, lower side of the item 220) provided on an anode side of the second dynode and on a photocathode side of the third dynode (note figure 9);

and wherein an electron multiplied by the second dynode (note figure 9, item 226) travels in a space between the first (note figure 9, item 218) and second electrodes to impinge on the third dynode (note figure 9, Stephenson does not disclose an electron multiplied by the second dynode travels in a space between the first and second

electrodes to impinge on the third dynode, however, in order for the electrons multiplied by the second dynode to reach anode, it is obvious that at least some electrons will impinge on the third dynode by traveling in a space between the first and second electrodes).

Regarding claim 8, Stephenson implicitly disclose the focusing electrode (note figure 9, item 220) is maintained at a potential which is higher than a potential of the second dynode (note figure 9, item 226) and lower than a potential of the third dynode (note figure 9, item 218).

Stephenson discloses the electrodes (note figure 9, items 146, 216, and 220) are connected to voltage supply through resistors (note figure 19). The potential differences between successive electrodes are determined by the values selected for various resistors (note figure 19, items R3-R14, and column 10, lines 53-61).

#### ***Contact information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bumsuk Won whose telephone number is 571-272-2713. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on 571-272-2457. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Bumsuk Won  
Patent Examiner

  
**JOSEPH WILLIAMS  
PRIMARY EXAMINER**